

IN THE CLAIMS

The following listing of claims is provided as a courtesy.

Listing of Claims

Claim 1 (previously presented): A reactor system for producing hydrogen from a hydrocarbon or hydrocarbon derivative using autothermal reformation, comprising:

a mixture formation chamber configured to form a mixture of the hydrocarbon or hydrocarbon derivative with water and air;

an autothermal reactor configured for simultaneous oxidation and steam reformation of the mixture, the autothermal reactor including a catalyst material; and

a temperature-regulated start-up burner including a burner unit configured to combust the hydrocarbon or hydrocarbon derivative with air so as to heat at least one of the mixture formation chamber and the autothermal reactor to a respective operating temperature, the start-up burner being configured to meter an air supply to a mixing zone where air of the air supply is mixed with hot gas coming out of the burner unit so as to regulate a temperature of hot gas coming out of the start-up burner to a value near or below a deterioration temperature of the catalyst material, before the hot gas contacts the at least one of the mixture formation chamber and the autothermal reactor.

Claim 2 (original): The reactor system as recited in claim 1 wherein a flow of the hot gas is guided so that the hot gas heats the autothermal reactor without material contact with the catalyst material.

Claim 3 (original): The reactor system as recited in claim 1 wherein a flow of the hot gas is guided into a reaction chamber of the autothermal reactor.

Claim 4 (original): The reactor system as recited in claim 3 wherein the flow of the hot gas is guided into the reaction chamber via the mixture formation chamber.

Claim 5 (original): The reactor system as recited in claim 4 wherein the flow of the hot gas is fed directly into the mixture formation chamber.

Claim 6 (original): The reactor system as recited in claim 4 further comprising a heat exchanger configured to exchange heat between a product gas of the autothermal reactor and air supplied to the mixture formation chamber, and wherein the flow of the hot gas is fed into a part of the heat exchanger through which the air is conducted.

Claim 7 (original): The reactor system as recited in claim 1 wherein the start-up burner is configured to be operated using excess oxygen.

Claim 8 (previously presented): The reactor system as recited in claim 1 wherein:

the supply air includes bypass air; and

the start-up burner includes a housing configured for the bypass air to flow between the housing and the burner unit, the housing including a mixing zone configured to mix hot gas coming out of the burner with the bypass air, the burner unit being disposed in the housing.

Claim 9 (original): The reactor system as recited in claim 1 wherein the hydrocarbon or hydrocarbon derivative is liquid at room temperature.

Claim 10 (original): The reactor system as recited in claim 1 wherein the reactor system is disposed in a fuel cell-driven motor vehicle.